WHAT WE CLAIM IS:

1. An image processing apparatus for compressing an input image using a motion vector, the image processing apparatus comprising:

storing means for storing position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

first detecting means for detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

determining means for determining a centroid of candidate pixels of the first frame which are identified with the position information detected by the first detecting means; and

second detecting means for detecting a motion vector of the target pixel from the position of the target pixel and the centroid.

2. An image processing method for an image processing apparatus that compresses an input image using a motion vector, the method comprising:

a storing step of storing position information of pixels of a first frame that is earlier in time than a

second frame for each address corresponding to a feature of each pixel;

a first detecting step of detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determining step of determining a centroid of candidate pixels of the first frame which are identified with the position information detected in the first detecting step; and

a second detecting step of detecting a motion vector of the target pixel from the position of the target pixel and the centroid.

3. A recording medium in which a computer-readable program for compressing an input image using a motion vector is recorded, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determination controlling step of controlling

determination of a centroid of candidate pixels of the first frame which are identified with the position information detected in the first detection controlling step; and

a second detection controlling step of controlling detection of a motion vector of the target pixel from the position of the target pixel and the centroid.

4. A program for causing a computer to compress an input image using a motion vector, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determination controlling step of controlling determination of a centroid of candidate pixels of the first frame which are identified with the position information detected in the first detection controlling step; and

a second detection controlling step of controlling detection of a motion vector of the target pixel from the position of the target pixel and the centroid.

5. An image processing apparatus for compressing an input image using a motion vector, the image processing apparatus comprising:

storing means for storing position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

first detecting means for detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

determining means for determining vectors from the position of the target pixel and the positions of candidate pixels of the first frame which are identified with the position information detected by the first detecting means; and

second detecting means for detecting, as a motion vector of the target pixel, one of the vectors which is the closest to an earlier motion vector of the target pixel in time.

6. An image processing method for an image processing apparatus that compresses an input image using a motion vector, the method comprising:

a storing step of storing position information of pixels of a first frame that is earlier in time than a

second frame for each address corresponding to a feature of each pixel;

a first detecting step of detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determining step of determining vectors from the position of the target pixel and the positions of candidate pixels of the first frame which are identified with the position information detected in the first detecting step; and

a second detecting step of detecting, as a motion vector of the target pixel, one of the vectors which is the closest to an earlier motion vector of the target pixel in time.

7. A recording medium in which a computer-readable program for compressing an input image using a motion vector is recorded, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second

frame;

a determination controlling step of controlling determination of vectors from the position of the target pixel and the positions of candidate pixels of the first frame which are identified with the position information detected in the first detection controlling step; and

a second detection controlling step of controlling detection of one of the vectors which is the closest to an earlier motion vector of the target pixel in time, as a motion vector of the target pixel.

8. A program for causing a computer to compress an input image using a motion vector, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determination controlling step of controlling determination of vectors from the position of the target pixel and the positions of candidate pixels of the first frame which are identified with the position information

detected in the first detection controlling step; and

a second detection controlling step of controlling detection of one of the vectors which is the closest to an earlier motion vector of the target pixel in time, as a motion vector of the target pixel.

9. An image processing apparatus for compressing an input image using a motion vector, the image processing apparatus comprising:

storing means for storing position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

first detecting means for detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

determining means for determining differences between a pixel value of the target pixel and pixel values of candidate pixels of the first frame which are identified with the position information detected by the first detecting means; and

second detecting means for detecting a motion vector of the target pixel from the position of the target pixel and the position of one of the candidate pixels when a minimum of the differences is determined.

10. The image processing apparatus according to claim 9, further comprising setting means for setting a search area corresponding to the position of the target pixel, wherein the determining means determines differences between the pixel value of the target pixel and the pixel values of the candidate pixels located within the search area.

11. The image processing apparatus according to claim 9, wherein the determining means performs matching processing between a base block including the target pixel and a reference block including the candidate pixels, and the second detecting means detects the motion vector of the target pixel from the position of the target pixel and the positions of the candidate pixels included in the reference block that is determined by the matching processing to be best matched with the base block.

12. An image processing method for an image processing apparatus that compresses an input image using a motion vector, the method comprising:

a storing step of storing position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detecting step of detecting the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determining step of determining differences between a pixel value of the target pixel and pixel values of candidate pixels of the first frame which are identified with the position information detected in the first detecting step; and

a second detecting step of detecting a motion vector of the target pixel from the position of the target pixel and the position of one of the candidate pixels when a minimum of the differences is determined.

13. A recording medium in which a computer-readable program for compressing an input image using a motion vector is recorded, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determination controlling step of controlling

determination of differences between a pixel value of the target pixel and pixel values of candidate pixels of the first frame which are identified with the position information detected in the first detection controlling step; and

a second detection controlling step of controlling detection of a motion vector of the target pixel from the position of the target pixel and the position of one of the candidate pixels when a minimum of the differences is determined.

14. A program for causing a computer to compress an input image using a motion vector, the program comprising:

a storage controlling step of controlling storage of position information of pixels of a first frame that is earlier in time than a second frame for each address corresponding to a feature of each pixel;

a first detection controlling step of controlling detection of the position information stored at an address corresponding to a feature of a target pixel of the second frame;

a determination controlling step of controlling determination of differences between a pixel value of the target pixel and pixel values of candidate pixels of the first frame which are identified with the position

information detected in the first detection controlling step; and

a second detection controlling step of controlling detection of a motion vector of the target pixel from the position of the target pixel and the position of one of the candidate pixels when a minimum of the differences is determined.